High School – Geometry

Kentucky Core Academic Standards with Targets





Grade Level/ Co	ourse: Geometry Unit 1
Standard:	G.CO.1 Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment based on the undefined notions of a point, line, distance along a line and distance around a circular arc.
Domain:	Congruence
Cluster:	Experiment with transformations in the plane.
Type:X	KnowledgeReasoningPerformance SkillProduct

Knowledge Targ	ets	Reasoning Targets			Performanc	e Skills Targets	Product Targets
Describe the undefined terms: point, line, and distance along a line in a plane.							
Define perpendicular lines, parallel lines, line segments, and angles.							
Define circle and the distance around a circular arc.							
Make sense of problems and persevere in solving them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	end to cision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.

Grade Level/ Co	ourse: Geometry Unit 1							
Standard with code:	CO.2 Represent transformations in the plane using, e.g., transparencies and geometry software; describe ansformations as functions that take points in the plane as inputs and give other points as outputs. Compare ansformations that preserve distance and angle to those that do not (e.g., translation versus horizontal stretch)							
Domain:	Congruence							
Cluster:	Experiment with transformations in the plane							
Туре:	Knowledge X_ReasoningPerformance SkillProduct							

Knowledge Tar	gets	Reasoning Targe	ets			Performance Skills Targets	Product Targets
and dilations. Describe trans functions that	formations as take points and	transparencies Write functions Compare trans those that do notions from a motions from a motions in geo specific distance rotations move	sformations in the and geometry so so to represent transformations that protection (e.g., translation at Build on stude arlier grades. Posteric concepts, the along a line particle objects along a specified angle a specified angle and a specif				
Make sense of problems and persevere in solving them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.

Grade Level/ Co	ourse (HS): Geometry Unit	1								
Standard with code:	G.CO.3 Given a rectangle onto itself.	.CO.3 Given a rectangle, parallelogram, trapezoid, or regular polygon, describe the rotations and reflections that carry it nto itself.								
Domain:	Congruence	Congruence								
Cluster:	Experiment with transfor	mations in the plane								
Type:X	Rea	asoningPerformance Skill	Product							
Knowledge Tar	gets	Reasoning Targets	Performance Skills Targets	Product Targets						
trapezoid, or re	gle, parallelogram, gular polygon, describe nd/or reflections that carry									
experience with earlier grades. motions in geor	A: Build on student n rigid motions from Point out the basis of rigid metric concepts, e.g, ove points a specific									

Make sense of	Reason	Construct viable	Model with	Use	Attend to	Look for and	Look for and
problems and	abstractly and	arguments and	mathematics	appropriate	precision	make use of	express regularity
persevere in	quantitatively	critique the		tools		structure	in repeated
solving them		reasoning of others		strategically			reasoning

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distance along a line parallel to a specified line; rotations move objects along a circular arc with a specified center

through a specified angle.

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Grade Level/ Co	ourse: Geometry Unit 1
Standard with	G.CO.4 Develop definitions of rotations, reflections and translations in terms of angles, circles, perpendicular lines, parallel
code:	lines and line segments.
Domain:	Congruence
Cluster:	Experiment with transformations in a plane
Type:	KnowledgeXReasoningPerformance SkillProduct

Knowledge Targo	ets	Reasoning Targe	ets		Performance Skills Targets Product Target				
Recall definitions of angles, circles, perpendicular and parallel lines and line segments.		Develop definitions of rotations, reflections and translations in terms of angles, circles, perpendicular lines, parallel lines and line segments. From Appendix A: Build on student experience with rigid motions from earlier grades. Point out the basis of rigid motions in geometric concepts, e.g., translations move points a specific distance along a line parallel to a specified line; rotations move objects along a circular arc with a specified center through a specified angle.							
Make sense of problems and persevere in solving them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.		nd to ision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.	

Grade Level/ Co	ourse: Geometry Unit 1
Standard with code:	G.CO.5 Given a geometric figure and a rotation, reflection or translation, draw the transformed figure using, e.g. graph paper, tracing paper or geometry software. Specify a sequence of transformations that will carry a given figure onto another.
Domain:	Congruence
Cluster:	Experiment with transformations in the plane.
Туре:	Knowledge XReasoningPerformance Skill Product

Knowledge Tar	gets	Reasoning Targe	ets			Performance	e Skills Targets	Product Targets
Given a geometric figure and a rotation, reflection or translation, draw the transformed figure using, e.g. graph paper, tracing paper or geometry software.		Draw a transformed figure and specify the sequence of transformations that were used to carry the given figure onto the other. From Appendix A: Build on student experience with rigid motions from earlier grades. Point out the basis of rigid motions in geometric concepts, e.g., translations move points a specific distance along a line parallel to a specified line; rotations move objects along a circular arc				9		
		•	center through a s	•	arc			
Make sense of problems and persevere in solving them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.		nd to ision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.

Grade Level/	Course: Geometry Unit 1
Standard with code:	G.CO.7 Use the definition of congruence in terms of rigid motions to show that two triangles are congruent if and only if corresponding pairs of sides and corresponding pairs of angles are congruent.
Domain:	Congruence
Cluster:	Understand congruence in terms of rigid motions
Туре:	KnowledgeXReasoningPerformance SkillProduct

Knowledge Targ	ets	Reasoning Targets					Performance Skills Targets	
Identify correspo and sides of two		Use the definition of congruence in terms of rigid motions to show that two triangles are congruent if corresponding pairs of sides and corresponding pairs of angles are congruent.						- Tungeto
Identify corresponding pairs of angles and sides of congruent triangles after rigid motions.		Use the definition of congruence in terms of rigid motions to show that if the corresponding pairs of sides and corresponding pairs of angles of two triangles are congruent then the two triangles are congruent.						
motions.		Justify congruency of two triangles using transformations.						
		From Appendix A: Rigonogruence. Student they preserve distance motions and their asstriangle congruence of	s reason from the ce and angle), whic sumed properties o	basic properties of h are assumed wit can be used to esta	rigid motions (tha hout proof. Rigid blish the usual			
Make sense of problems and persevere in solving them.	Reason abstractly and quantitatively		Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	mak	k for and te use of cture.	Look for and express regularity in repeated reasoning.

Grade Level/ Co	Grade Level/ Course: Geometry Unit 1							
Standard with code:	G.CO.8 Explain how the criteria for triangle congruence (ASA, SAS, SSS) follow from the definition of congruence in terms of rigid motions.							
Domain:	Congruence							
Cluster:	Understand congruence in terms of rigid motions							
Type:I	KnowledgeXReasoningPerformance SkillProduct							

Knowledge Targ	ets	Reasoning Targe	ets		Per	formanc	e Skills Targets	Product Targets
Informally use ri take angles to a segments to seg grade). Formally use dy software or stra	gid motions to ngles and ments (from 8 th namic geometry ightedge and angles to angles	Explain how the SAS, SSS) follow terms of rigid motion included side of same rigid motion congruent to the From Appendix of the definition the basic proper distance and angual Rigid motions are to establish the	criteria for triangle is from the definitions (i.e. if two a one triangle are trans) then the triangle original triangle). A: Rigid motions a of congruence. Staties of rigid motiongle), which are assumed their assumed p	ansformed by the agle image will be at the foundation udents reason from the first they present the med without properties can be ustruence criteria, when the same and the same the same around the same arounce criteria, when the same arounce criteria, when the same arounce arounce criteria, when the same arounce arounce criteria, when the same arounce arounce arounce criteria, when the same arounce arou	n n ve of.		Ţ	
Make sense of problems and persevere in solving them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision		Look for and make use of structure.	Look for and express regularity in repeated reasoning.

Grade Level/	Course: Geometry Unit 1								
Standard with code:	G.CO.9 Prove theorems about lines and angles. Theorems include: vertical angles are congruent; when a transversal crosses parallel lines, alternate interior angles are congruent and corresponding angles are congruent; points on a perpendicular bisector of a line segment are exactly those equidistant from the segment's endpoints.								
Domain:	Congruence								
Cluster:	Prove Geometric Theorems								
Туре:	Knowledge X Reasoning Performance Skill Product								

Knowledge Targe	ets	Reasoning Targets	Reasoning Targets						Product Targets
transver All angle Corresponding Alternat Perpend	angles lines with reals relationships onding angles re interior angle licular bisector ant from	Prove correspond cut by a transvers Prove alternate in are cut by a trans Prove points are of	ling angles are sal and convers nterior angles a versal and conon a perpendic nt from the segon are manded in the segon are ma	congruent when ie. Ire congruent when verse. Ular bisector of a ments endpoint. Ultiple ways of wow diagrams, in tests. Irds. Students sho	en two parallel ling line segment are writing proofs, suctions form buld be encourage	nes h as at, ed to			
Make sense of problems and persevere in solving them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.		r and make tructure.		

Grade Level/	Course: Geometry Unit 1							
Standard with code:	G.CO.10 Prove theorems about triangles. Theorems include: measures of interior angles of a triangle sum to 180°; base angles of isosceles triangles are congruent; the segment joining midpoints of two sides of a triangle is parallel to the third side and half the length; the medians of a triangle meet at a point.							
Domain:	Congruence							
Cluster:	Prove Geometric Theorems							
Туре:	Knowledge X Reasoning Performance Skill Product							

Knowledge Tar	gets	Reasoning Targets Performance					nce Skills	Prod	uct Targets	
							Targets			
Identify the hypo		Design	an argument to pro	ve theorems abo	out triangles.					
and conclusion o theorem.	fa	Analyz	e components of the	e theorem.						
		Prove t	theorems about tria	ngles.						
		as in na format encour while e Implen concur	Appendix A: Encourage arrative paragraphs, and using diagram raged to focus on the exploring a variety on the exploring a variety or mentations of G.CO. Frence of perpendiculation for G.C.3 in Ur	using flow diagr s without words. e validity of the u f formats for exp 10 may be extend lar bisectors and	ams, in two-colum Students should b Inderlying reasonir ressing that reason ded to include	n ee ng ning.				
Make sense of problems and persevere in solving them.	roblems and abstractly a ersevere in quantitativ		Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Atten precis		Look for a make use structure.		Look for and express regularity in repeated reasoning.

Grade Level/	Course: Geometry Unit 1
Standard with code:	G.CO.11. Prove theorems about parallelograms. Theorems include: opposite sides are congruent, opposite angles are congruent, the diagonals of a parallelogram bisect each other, and conversely, rectangles are parallelograms with congruent diagonals.
Domain:	Congruence
Cluster:	Prove geometric theorems
Туре:	Knowledge X Reasoning Performance Skill Product

ets	Reasoning Targe	ets	Performance	e Skills Targets	Product Targets		
f quadrilaterals.	•	•	• .				
	congruent trian	igles are congrue	nt to solve				
Explain theorems for parallelograms and relate to		problems.					
figure.		of special quadri	laterals in a proof	f.			
	proofs, such as in diagrams, in two without words.	n narrative paragra -column format, a Students should be f the underlying re	nphs, using flow nd using diagrams e encouraged to fo asoning while				
Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of	Model with mathematics.	Use appropriate tools strategically.			Look for and make use of structure.	Look for and express regularity in repeated reasoning.
	and relate to Reason abstractly	reason abstractly and quantitatively. Use the princip congruent trian problems. Use properties From Appendix Aproofs, such as in diagrams, in two without words. on the validity of exploring a varie reasoning. Construct viable arguments and critique the	Use the principle that correspond congruent triangles are congruents for problems. Use properties of special quadrication of the validity of the underlying responding a variety of formats for exploring a variety of formats for exploring and quantitatively. Use properties of special quadrication of the validity of the underlying responding a variety of formats for exploring a variety of formats for exploring and quantitatively. Construct viable arguments and critique the reasoning of	Use the principle that corresponding parts of congruent triangles are congruent to solve problems. Use properties of special quadrilaterals in a proof Use properties of special quadrilaterals in a proof From Appendix A: Encourage multiple ways of writing proofs, such as in narrative paragraphs, using flow diagrams, in two-column format, and using diagrams without words. Students should be encouraged to for on the validity of the underlying reasoning while exploring a variety of formats for expressing that reasoning. Reason abstractly and quantitatively. Reason abstractly and quantitatively. Construct viable arguments and critique the reasoning of	Use the principle that corresponding parts of congruent triangles are congruent to solve problems. Use properties of special quadrilaterals in a proof. From Appendix A: Encourage multiple ways of writing proofs, such as in narrative paragraphs, using flow diagrams, in two-column format, and using diagrams without words. Students should be encouraged to focus on the validity of the underlying reasoning while exploring a variety of formats for expressing that reasoning. Reason abstractly and quantitatively. Construct viable arguments and critique the reasoning of Model with mathematics. Construct viable arguments and critique the reasoning of	Use the principle that corresponding parts of congruent triangles are congruent to solve problems. Use properties of special quadrilaterals in a proof. From Appendix A: Encourage multiple ways of writing proofs, such as in narrative paragraphs, using flow diagrams, in two-column format, and using diagrams without words. Students should be encouraged to focus on the validity of the underlying reasoning while exploring a variety of formats for expressing that reasoning. Reason abstractly and quantitatively. Reason abstractly and quantitatively. Construct viable arguments and critique the reasoning of Model with mathematics. Use appropriate tools strategically. Attend to precision.	Togramment triangles are congruent to solve problems. Use properties of special quadrilaterals in a proof. From Appendix A: Encourage multiple ways of writing proofs, such as in narrative paragraphs, using flow diagrams, in two-column format, and using diagrams without words. Students should be encouraged to focus on the validity of the underlying reasoning while exploring a variety of formats for expressing that reasoning. Reason abstractly and quantitatively. Reason abstractly and quantitatively. Construct viable arguments and critique the reasoning of Model with mathematics. Use the principle that corresponding parts of congruent to solve problems. Use properties of special quadrilaterals in a proof. From Appendix A: Encourage multiple ways of writing proofs, such as in narrative paragraphs, using flow diagrams without words. Students should be encouraged to focus on the validity of the underlying reasoning while exploring a variety of formats for expressing that reasoning. Look for and make use of structure.

Grade Level/ Standard with code:	G.CO.12 Make formal geometric constructions with a variety of tools and methods (compass and straightedge, string, reflective devices, paper folding, dynamic geometric software, etc.). Copying a segment; copying an angle; bisecting a segment; bisecting an angle; constructing perpendicular lines, including the perpendicular bisector of a line segment; and constructing a line parallel to a given line through a point not on the line.							
Domain:	Congruence							
Cluster:	Make geometric constructions							
Туре:	Knowledge ReasoningXPerformance Skill Product							

Knowledge Targ	gets	Reasoning Targe	ets		Perf	ormance Skills Targ	gets	Product Targets
Explain the congeometric figure variety of tools		Apply the definitions, properties and theorems about line segments, rays and angles to support geometric constructions. Apply properties and theorems about parallel and perpendicular lines to support constructions. From Appendix A: Build on prior student experience with simple constructions. Emphasize the ability to formalize and explain how these constructions result in the desired objects. Some of these constructions are closely related to previous standards and can be introduced in conjunction with them.			Perform geometric constructions including: Copying a segment; copying an angle; bisecting a segment; bisecting an angle; constructing perpendicular lines, including the perpendicular bisector of a line segment; and constructing a line parallel to a given line through a point not on the line, using a variety of tools and methods (compass and straightedge, string, reflective devices, paper folding, dynamic geometric software, etc.).			
Make sense of problems and persevere in solving them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropri tools strategi		Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.

Grade Level/ Co	Grade Level/ Course: Geometry Unit 1						
Standard with code:	G.CO.13 Construct an equilateral triangle, a square and a regular hexagon inscribed in a circle.						
Domain:	Congruence						
Cluster:	Make geometric constructions						
Туре:	KnowledgeReasoningPerformance Skill <u>X</u> Product						

Knowledge Target	ts	Reasoning Targe	ets			Performance	e Skills Targets	Product Targets
Note: Underpinnir	ng performance,							Construct an
reasoning, and kno	owledge targets,							equilateral
if applicable, are a	ddressed in							triangle, a square
G.CO.12								and a regular
								hexagon
From Appendix A:	Build on prior							inscribed in a
student experienc	e with simple							circle.
constructions. Em	phasize the							
ability to formalize	e and explain							
how these constru	ictions result in							
the desired object								
Some of these con								
closely related to p	•							
standards and can								
in conjunction wit	h them.							
Make sense of	Reason	Construct	Model with	Use	Att	end to	Look for and	Look for and
problems and abstractly and		viable	mathematics.	appropriate	ropriate preci		make use of	express
persevere in quantitatively.		arguments and		tools			structure.	regularity in
solving them.		critique the		strategically.				repeated
		reasoning of						reasoning.
		others.						

Grade Level/ Co	ourse: Geometry Unit 2						
Standard with	G.SRT.1a Verify experimentally the properties of dilations given by a center and a scale factor.						
code:	a. A dilation takes a line not passing through the center of the dilation to a parallel line, and leaves a line passing						
	through the center unchanged.						
Domain:	Similarity, Right Triangles, and Trigonometry						
Cluster:	Understand similarity in terms of similarity transformations						
Type:I	KnowledgeXReasoningPerformance SkillProduct						

Knowledge Targe	ets	Reasoning Targe	ets			Performance	e Skills Targets	Product Targets
Define image, pre-image, scale factor, center, and similar figures as they relate to transformations.		Verify experimentally that a dilated image is similar to its pre-image by showing congruent corresponding angles and proportional sides.						
Identify a dilation factor and center	-	Verify experimentally that a dilation takes a line not passing through the center of the dilation to a parallel line by showing the lines are parallel. Verify experimentally that dilation leaves a line passing through the center of the dilation unchanged by showing that it is the same line.						
Make sense of problems and persevere in solving them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.		Look for and make use of structure.	Look for and express regularity in repeated reasoning.

Grade Level/ Co	Grade Level/ Course: Geometry Unit 2						
Standard with	G.SRT.1b Verify experimentally the properties of dilations given by a center and a scale factor.						
code:	b. The dilation of a line segment is longer or shorter in the ratio given by the scale factor.						
Domain:	Similarity, Right Triangles, and Trigonometry						
Cluster:	Understand similarity in terms of similarity transformations						
Type:KnowledgeXReasoningPerformance SkillProduct							

Knowledge Targets Reasoning Targets					Performance	Skills Targets	Product Targets	
Define image, prefactor, center, an as they relate to the light of the	e-image, scale d similar figures transformations. n stating its scale cale factor nany times longer ed line segment is	Verify experimer	ntally that the dilat	cion of a line segme en by the scale fact		Performance	e Skills Targets	Product Targets
Make sense of problems and persevere in solving them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.		nd to ision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.

Grade Level/ Course: Geometry Unit 2						
Standard with code:	SRT.2 Given two figures, use the definition of similarity in terms of similarity transformations to decide if they re similar; explain using similarity transformations the meaning of similarity for triangles as the equality of all presponding pairs of angles and the proportionality of all corresponding pairs of sides.					
Domain:	Similarity, Right Triangles, and Trigonometry					
Cluster:	Understand similarity in terms of similarity transformations					
Туре:	Knowledge X Reasoning Performance Skill Product					

Knowledge Targets Reasoning Targets				Performance	Skills Targets	Product Targets		
By using similari transformations, triangles are sim corresponding ar congruent and al pairs of sides are	explain that ilar if all pairs of ngles are	Given two figure	es, decide if they ar ilarity in terms of s	e similar by using t similarity	the			
Make sense of problems and persevere in solving them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.		end to cision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.

Grade Level/ Co	Grade Level/ Course: Geometry Unit 2							
Standard with	G.SRT.3 Use the properties of similarity transformations to establish the AA criterion for two triangles to be							
code:	similar.							
Domain:	Similarity, Right Triangles, and Trigonometry							
Cluster:	Understand similarity in terms of similarity transformations							
Type:KnowledgeX_ReasoningPerformance SkillProduct								

Knowledge Targ	ets	Reasoning Targe	ets		Performance	Skills Targets	Product Targets
Recall the proper transformations.	rties of similarity	Establish the AA extending the pr	criterion for simila	arity of triangles by ity transformations triangles.	Performance	SKIIIS Targets	Product Targets
Make sense of problems and persevere in solving them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	nd to ision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.

Grade Level/ Co	Grade Level/ Course: Geometry Unit 2						
Standard with code:	G.SRT.4 Prove theorems about triangles. Theorems include: a line parallel to one side of a triangle divides the other two proportionally, and conversely; the Pythagorean Theorem proved using triangle similarity.						
Domain:	Similarity, Right Triangles, and Trigonometry						
Cluster:	Prove theorems involving similarity.						
Type:k	KnowledgeXReasoningPerformance SkillProduct						

Knowledge Targ	ets	Reasoning Targets				Performan	ce Skills Targets	Product Targets
Recall postulates and definitions to theorems about	triangles.	Prove theorems invo (Theorems include: divides the other two Pythagorean Theore	a line parallel to or or proportionally, a	ne side of a triangle nd conversely; the				
Make sense of problems and persevere in solving them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Atten- precis		Look for and make use of structure.	Look for and express regularity in repeated reasoning.

Grade Level/ Co	Grade Level/ Course: Geometry Unit 2						
Standard with	G.SRT.4 Prove theorems about triangles. Theorems include: a line parallel to one side of a triangle divides the						
other two proportionally, and conversely; the Pythagorean Theorem proved using triangle similarity.							
Domain:	Similarity, Right Triangles, and Trigonometry						
Cluster:	Prove theorems involving similarity.						
Type:KnowledgeXReasoningPerformance SkillProduct							

Knowledge Tar	gets	Reasoning Targets				Performan	ce Skills Targets	Product Targets
Recall postulate and definitions theorems abou	es, theorems, to prove	Prove theorems invo (Theorems include: divides the other tw Pythagorean Theore	a line parallel to o o proportionally, a	ne side of a triangle and conversely; the				
Make sense of problems and persevere in solving them.	Reason abstractly and quantitativel		Model with mathematics.	Use appropriate tools strategically.	Atten precis		Look for and make use of structure.	Look for and express regularity in repeated reasoning.

Grade Level/ Co	Grade Level/ Course: Geometry Unit 2						
Standard with code:	G.SRT.5 Use congruence and similarity criteria for triangles to solve problems and to prove relationships in geometric figures.						
Domain:	Similarity, Right Triangles, and Trigonometry						
Cluster:	Prove theorems involving similarity						
Type:I	KnowledgeXReasoningPerformance SkillProduct						

Knowledge Targets		ets		P	Performance	Skills Targets	Product Targets
Recall congruence and similarity criteria for triangles.		Use congruency and similarity theorems for triangles to solve problems.					
	,	•	•	to			
Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of	Model with mathematics.	Use appropriate tools strategically.			Look for and make use of structure.	Look for and express regularity in repeated reasoning.
	e and similarity (les.	Reason abstractly and quantitatively. Reason asstractly and quantitatively. Reason similarity Use congruency solve problems. Use congruency prove relationsh	Use congruency and similarity theosolve problems. Use congruency and similarity theoprove relationships in geometric figure and quantitatively. Construct viable arguments and critique the Use congruency and similarity theoprove relationships in geometric figure and quantitatively.	Use congruency and similarity theorems for triangles solve problems. Use congruency and similarity theorems for triangles prove relationships in geometric figures. Reason abstractly and quantitatively. Construct viable arguments and critique the Model with mathematics. Use appropriate tools strategically.	Use congruency and similarity theorems for triangles to solve problems. Use congruency and similarity theorems for triangles to prove relationships in geometric figures. Reason abstractly and quantitatively. Construct viable arguments and critique the Model with mathematics. Use appropriate tools strategically.	Reason abstractly and quantitatively. Use congruency and similarity theorems for triangles to solve problems. Use congruency and similarity theorems for triangles to prove relationships in geometric figures. Model with mathematics. We appropriate tools strategically. Attend to precision.	Use congruency and similarity theorems for triangles to solve problems. Use congruency and similarity theorems for triangles to prove relationships in geometric figures. Reason abstractly and quantitatively. Construct viable arguments and critique the Model with mathematics. Use appropriate tools strategically. Look for and make use of structure.

Grade Level/ Co	Grade Level/ Course: Geometry Unit 2						
Standard with code:	G.SRT.6 Understand that by similarity, side ratios in right triangles are properties of the angles in the triangle, leading to definitions of trigonometric ratios for acute angles.						
Domain:	Similarity, Right Triangles, and Trigonometry						
Cluster:	Define trigonometric ratios and solve problems involving right triangles						
Туре:	KnowledgeXReasoning Performance SkillProduct						

Knowledge Targe	ets	Reasoning Targe	Reasoning Targets				e Skills Targets	Product Targets
Names the sides	of right triangles	Compare commo	on ratios for simila	r right triangles and	d			
as related to an a	acute angle.	develop a relation	nship between the	e ratio and the acu	te			
	-	angle leading to	the trigonometry i	ratios.				
Recognize that if	two right		,					
triangles have a	~							
congruent angles								
triangles are sim								
Make sense of	Reason abstractly	Construct viable	Model with	Use appropriate		nd to	Look for and make	
problems and	and quantitatively.	arguments and	mathematics.	tools strategically.	prec	ision.	use of structure.	express regularity
persevere in solving them.		critique the reasoning of						in repeated reasoning.
Solving them.		others.						reasoning.

Grade Level/ Co	Grade Level/ Course: Geometry Unit 2						
Standard with code:	G.SRT.7 Explain and use the relationship between the sine and cosine of complementary angles.						
Domain:	Similarity, Right Triangles, and Trigonometry						
Cluster:	Define trigonometric ratios and solve problems involving right triangles						
Туре:	KnowledgeXReasoningPerformance SkillProduct						

Knowledge Targ	Knowledge Targets		Reasoning Targets				e Skills Targets	Product Targets
Use the relation	ship between the of complementary		sine and cosine of	complementary			J	J
Make sense of problems and persevere in solving them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.		nd to ision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.

Grade Level/ Co	Grade Level/ Course: Geometry Unit 2						
Standard with code:	G.SRT.8 Use trigonometric ratios and the Pythagorean Theorem to solve right triangles in applied problems. *						
couc.							
Domain:	Similarity, Right Triangles, and Trigonometry						
Cluster:	Define trigonometric ratios and solve problems involving right triangles						
Type:KnowledgeXReasoningPerformance SkillProduct							

Knowledge Tar	wledge Targets Reasoning Targets						e Skills Targets	Product Targets
Recognize which be used to solve applied problem	n methods could e right triangles in ns. ns. nown angle or iangle using sine,	Apply right trian	gle trigonometric r	ratios and the nt triangles in appli	ed			
Make sense of problems and persevere in solving them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.		end to cision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.

Grade Level/ (Grade Level/ Course: Geometry Unit 2							
Standard with code:	G.MG.1 Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).*(*Modeling Standard)							
Domain:	Modeling with Geometry							
Cluster:	Apply geometric concepts in modeling situations							
Туре:	Knowledge X_Reasoning Performance Skill Product							

Knowledge Targets			soning Targets			Perf	formance	Skills Targets	Product Targets
Use measures and properti geometric shapes to descri world objects.		Given a real world object, classify the object as a known geometric shape – use this to solve problems in context.							
		From Appendix A: Focus on situations well modeled by trigonometric ratios for acute angles.							
Make sense of problems and persevere in solving them.	Reason abstractly quantitativ		Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriation tools strategically.	1	Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.

Grade Level/ (Grade Level/ Course: Geometry Unit 2						
Standard with code:	G.MG.2 Apply concepts of density based on area and volume in modeling situations (e.g., persons per square mile, BTUs per cubic foot).* (*Modeling Standard)						
Domain:	Modeling with Geometry						
Cluster:	Apply geometric concepts in modeling situations						
Туре:	KnowledgeXReasoningPerformance SkillProduct						

Knowledge Targets	Rea	Reasoning Targets				e Skills Targets	Product Targets
Define density.	mo	ply concepts of density base del real-life situations (e.g. Js per cubic foot).					
Make sense of problems and persevere in solving them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.

Grade Level/	Course: Geometry Unit 2
Standard with code:	G.MG.3 Apply geometric methods to solve design problems (e.g., designing an object or structure to satisfy physical constraints or minimize cost; working with typographic grid systems based on ratios).*(*Modeling Standard)
Domain:	Modeling with Geometry
Cluster:	Apply geometric concepts in modeling situations
Туре:	KnowledgeX ReasoningPerformance SkillProduct

Knowledge Targ	ets	Reasoning Targe	ets			Performance	e Skills Targets	Product Targets
Describe a typog system.		Apply geometric methods to solve (e.g., designing an object or struphysical constraints or minimize typographic grid systems based From Appendix A: Focus on situation trigonometric ratios for acute angles Construct viable Model with		ructure to satisfy ze cost; working with d on ratios). ations well modeled by gles.				
Make sense of problems and persevere in solving them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.		nd to ision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.

Grade Level/ Co	ourse: Geometry Unit 2
Standard with code:	G.SRT.9 (+) Derive the formula $A = 1/2$ ab sin(C) for the area of a triangle by drawing an auxiliary line from a vertex perpendicular to the opposite side.
Domain:	Similarity, right triangles, and trigonometry
Cluster:	Apply trigonometry to general triangles
Туре:I	KnowledgeXReasoningPerformance SkillProduct

Knowledge Targ	gets	Reasoning Targe	ets		Performance	e Skills Targets	Product Targets
Recall right trian	ngle trigonometry matical problems.	Derive the formulariangle by draw					
Make sense of problems and persevere in solving them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	end to cision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.

Grade Level/	Grade Level/ Course: Geometry Unit 2						
Standard with code:	G.SRT.10 (+) Prove the Laws of Sines and Cosines and use them to solve problems.						
Domain:	Similarity, Right Triangles, and Trigonometry						
Cluster:	Apply trigonometry to general triangles						
Туре:	KnowledgeXReasoningPerformance SkillProduct						

Knowledge Ta	rgets	Reasoning Targ	gets		Performance SI	cills Targets	Product Targets
Use the Laws of Cosines this to		Prove the Law	of Sines				
angles or side length measurements.		Prove the Law	Prove the Law of Cosines				
		Recognize when the Law of Sines or Law of Cosines can be applied to a problem and solve problems in context using them.					
		case of Laws of	A: With respect Sines and Cosing and cosine mutes.	es, the			
Make sense of problems and persevere in solving them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.

Grade Level/	Course: Geometry Unit 2
Standard with code:	G.SRT.11 (+) Understand and apply the Law of Sines and the Law of Cosines to find unknown measurements in right and non-right triangles (e.g., surveying problems, resultant forces).
Domain:	Similarity, Right Triangles, and Trigonometry
Cluster:	Apply trigonometry to general triangles
Туре:	KnowledgeXReasoningPerformance SkillProduct

Knowledge Ta	rgets		Reasoning Target	ts		Performance Skills	Product Targets
Determine from given measurements in right and non-right triangles whether it is appropriate to use the Law of Sines or Cosines.			Apply the Law of Cosines to find ur right and non-right problems, resultations. From Appendix A general case of the Cosines, the definement of the cosines of the cosines of the definement of the cosines of the definement of the cosines of the definement of the cosines of the cosines of the definement of the cosines of t	nknown measurer nt triangles (e.g., s int forces). : With respect to ne Laws of Sines a nition of sine and	nents in surveying the nd cosine	Targets	
Make sense of problems and persevere in solving them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.

Standard with Code:		G.GMD.3 Use volume formulas for cylinders, pyramids, cones, and spheres to solve problems.*(*Modeling Standard)								
Domain:		leasurement and Dime	nsion							
Cluster:	Explain volur	ne formulas and use th	em to solve probl	ems.						
Type:Kne			erformance Skill	Product	:					
Knowledge Targ	gets	Reasoning Targets		Performance	Skill Targets	Product Targe	ets			
Knowledge Targets Utilize the appropriate formula for volume depending on the figure.		Reasoning Targets Use volume formulas for cylinders, pyramids, cones, and spheres to solve contextual problems. From Appendix A: Informal arguments for area and volume formulas can make use of the way in which area and volume scale under similarity transformations: when one figure in the plane results from another by applying a similarity transformation with scale factor K, its area is K² times the area of the first. Similarly, volumes of solid figures scale by K³ under a similarity transformations with scale factor K.				Product Targets				
of problems	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.			

Standard with Code: G.GMD.4 Identify the shapes of two-dimensional cross-sections of three-dimensional objects, and identify the shapes of two-dimensional cross-sections of three-dimensional objects, and identify the shapes of two-dimensional objects.							
Domain:	Geometric Me	easurement & D	imension				
Cluster:	Visualize relat	ionships betwe	en two-dimensional ar	d three-dime	ensional objects	<u> </u>	
Type:Kno	wledge <u>X</u> Re	asoning	Performance Skill _	Product		,	
Knowledge Ta	rgets	Reasoning	Targets	Perform Targets	ance Skill	Product Targets	
Use strategies to help visualize relationships between two-dimensional and three dimensional objects		three-dimensional ob	oss-sections to their onal objects -dimensional objects otations of two- njects.				
	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.

Grade Level/ Course: Geometry Unit 3							
Standard with code:	G.MG.1 Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).*(*Modeling Standard)						
Domain:	Modeling with Geometry						
Cluster:	Apply geometric concepts in modeling situations						
Туре:	KnowledgeXReasoningPerformance SkillProduct						

Knowledge Target	S	Reas	oning Targets			Performance	Skills Targets	Product Targets
Use measures and p geometric shapes to world objects		Given a real world object, classify the object as a known geometric shape; use this to solve problems in context.						
	From Appendix A: Focus on situations that require relating two- and three-dimensional objects, determining and using volume, and the trigonometry of general triangles.							
Make sense of problems and persevere in solving them. Reason abstractly and quantitatively.		•	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.

Standard with	G.GPE.4 Use coordinates to prove simple geometric theorems algebraically. For example, prove or disprove							
Code:	that a figure of	that a figure defined by four given points in the coordinate plane is a rectangle; prove or disprove that the						
	point (1, √3) l	(1, $\sqrt{3}$) lies on the circle centered at the origin and containing the point (0, 2).						
Domain:	Expressing Ge	g Geometric Properties With Equations						
Cluster:	Use coordina	tes to prove simple g	eometric theorem	s algebraically	•			
Type:Kn	owledge <u>X</u>	_Reasoning	Performance Skill	Produ	ct	<u>, </u>		
Knowledge Tar	gets	Reasoning Targets		Performance Skill Targets		Product Targets		
Recall previous	understandings	Use coordinates to prove simple						
of coordinate ge	eometry	geometric theorems algebraically.						
(including, but r	not limited to:	For example, prove	or disprove that					
distance, midpo	int and slope	a figure defined by	four given points					
formula, equation of a line,		in the coordinate p	lane is a					
definitions of parallel and		rectangle; prove or	disprove that					
perpendicular lines, etc.)		the point $(1, \sqrt{3})$ lies on the circle						
		centered at the origin and						
• •	A: This unit has	containing the point (0, 2).						
a close connect								
next unit. For e	• •	e.g., derive the equ						
curriculum migh	•	through 2 points us	ing similar right					
G.GPE.1 and the		triangles.						
treatment of G.								
standards in this unit.								
Reasoning with triangles in this unit is limited to right triangles;								
Make sense of problems and	Reason abstractly and	Construct viable arguments and	Model with mathematics.	Use	Attend to precision.	Look for and make use of	Look for and	
persevere in	quantitatively.	critique the	mathematics.	appropriate tools	precision.	structure.	express regularity in	
solving them.	qualiticatively.	reasoning of others.		strategically.		311 43141 61	repeated	
-							reasoning.	

	urse: Geometry Unit 4							
Standard with	G.GPE.5 Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems (e.g., find							
Code:	the equation of a line parallel or perpendicular to a given line that passes through a given point).							
Domain:	Expressing Geometric Properties with Equations							
Cluster:	Use coordinates to p	prove simple geom	etric theorems algebra	aically				
Type:Kno	owledge <u>X</u> Reaso	oningPerfo	ormance Skill	Product				
Knowledge Targ	ets	Reasoning Targets		Performance Skill Targets		Product Targets		
Recognize that s	lopes of parallel lines	Prove the slope criteria for parallel						
are equal.		and perpendicula	r lines and use them					
		to solve geometri	c problems.					
Recognize that s	lopes of perpendicular							
lines are opposit	te reciprocals (i.e, the	From Appendix A	: Relate work on					
slopes of perper	ndicular lines have a	parallel lines in G.	GPE.5 to work on					
product of -1)		A.REI.5 in High Sc	hool Algebra 1					
		involving systems	of equations having					
Find the equation	on of a line parallel to a	no solution or infi	nitely many					
given line that p	asses through a given	solutions.						
point.								
Find the equation	un of a line							
·								
perpendicular to a given line that passes through a given point.								
passes tillough	a given point.							
Make sense of	Reason abstractly and	Construct viable	Model with	Use	Attend to	Look for	Look for and	
problems and	quantitatively.	arguments and	mathematics.	appropriate	precision.	and make	express	
persevere in		critique the		tools		use of	regularity in	
solving them.		reasoning of		strategically.		structure.	repeated	
		others.					reasoning.	

Standard with	urse (high School	•		nt hotuson turo	aivon nointa th	t nartitians tha	coamont in a
							segment in a
Code:	given ratio.						
Domain:	Expressing Ge	ometric Propert	ies with Equation	S			
Cluster:	Use coordinat	es to prove simp	ole geometric the	orems algebraical	lly		
Type:Knowl	edge _XReas	oningP	erformance Skill	Product			
Knowledge Targ	gets	Reasoning Targets		Performance Sk	ill Targets	Product Targets	
Recall the definition of ratio. Recall previous understandings of coordinate geometry.		Given a line segment (including those with positive and negative slopes) and a ratio, find the point on the segment					
		that partitions the given ratio.	the segment into				
Make sense of problems and persevere in solving them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.

	G.GPE.7 Use coo	rse: Geometry Unit 4 GPE.7 Use coordinates to compute perimeters of polygons and area of triangles and rectangles, e.g., using the distance						
Code: Domain:	formula.*(*Modeling Standard) Expressing Geometric Properties with Equations							
Domain.								
Cluster:	Use coordinates to prove simple geometric theorems algebraically							
Туре:К	nowledgeX_	Reasoning	Performance Skill	Product				
Knowledge Ta	irgets	Reasonin	g Targets	Performance Targets	Product Targets			
a polygon to dimensions (i.e., the dis Use the coor a triangle to dimensions the area (i.e. vertices by formula, Py Use the coor a rectangle dimensions the area (i.e.	o find the necessary for finding the peri stance between ver	contextual and/or per tices). From Apperitices of practice wits connectinding ween n, etc.). tices of ry inding	a model of figures in problems to compute area rimeter. Endix A: G.GPE.7 provides ith the distance formula and tion with the Pythagorean					

Grade Level/Cou	urse (high School): Geometry Uni	it 4				
Standard with	G.GPE.2 Deriv	e the equation o	f a parabola giver	n a focus and dire	ectrix.		
Code:							
Domain:	Expressing Ge	ometric Properti	ies with Equations	5			
Cluster:	Translate bety	veen the geome	tric description ar	nd the equation for	or a conic sectio	n.	
Type:Know	ledge <u>X</u> Rea		Performance Skill	Product			
Knowledge Targ	ets	Reasoning Targ	ets	Performance Sk	ill Targets	Product Target	S
Define a parabola including the relationship of the focus and the equation of the directrix to the parabolic shape. From Appendix A: The directrix should be parallel to a coordinate axis.							
of problems	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.

Grade Level/ Co	urse (HS): Geomet	try Unit 5						
Standard with code:	G.C.1 Prove that a	all circles are simila	ar.					
Domain:	Circles							
Cluster:	Understand and a	pply theorems ab	out circles					
Type:Kı	nowledge <u>X</u>	Reasoning	Performance	Skill	_Product			
Knowledge Targ	gets	Reasoning Targe	ets		Performance Skills	Targets	Produ	ct Targets
Recognize when figures are similar. (Two figures are similar if one is the image of the other under a transformation from the plane into itself that multiplies all distances by the same positive scale factor, k. That is to say, one figure is a dilation of the other.) Reasoning Targets Compare the ratio of the circumference of a circle to the diameter of the circle. Discuss, develop and justify this ratio for several circles. Determine that this ratio is constant for all circles.								
Make sense of problems and persevere in solving them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for make use structure	e of	Look for and express regularity in repeated reasoning.

Grade Level/ Co	ourse (HS): Geometry Unit 5					
Standard with code:	G.C.2 Identify and describe relationships among inscribed angles, radii, and chords. Include the relationship between central, inscribed, and circumscribed angles; inscribed angles on a diameter are right angles; the radius of a circle is perpendicular to the tangent where the radius intersects the circle.					
Domain:	Circles					
Cluster:	Understand and apply theorems about circles					
Type:Kr	ype:KnowledgeXReasoningPerformance SkillProduct					

Knowledge Targe	ets	Reasoning Targe	ets		Performance Skills	Targets	Produ	ct Targets
Identify inscribed angles, radii, chords, central angles, circumscribed angles, diameter, tangent.			tionship between cumscribed angles their measures.	· ·				
Recognize that inscribed angles on a diameter are right angles.								
Recognize that radius of a circle is perpendicular to the radius at the point of tangency.								
Make sense of problems and persevere in solving them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for a make use structure	e of	Look for and express regularity in repeated reasoning.

Grade Level/	Course (HS): Geometry Unit 5
Standard with code:	G.C.3 Construct the inscribed and circumscribed circles of a triangle, and prove properties of angles for a quadrilateral inscribed in a circle.
Domain:	Circles
Cluster:	Understand and apply theorems about circles.
Туре:	KnowledgeReasoningXPerformance Skill Product

Knowledge Targo	ets			Performance Skills Targets		Product Targets		
Define inscribed and circumscribed circles of a triangle.		Prove properties of angles for a quadrilateral inscribed in a circle.		Construct inscribed circles of a triangle				
Recall midpoint and bisector definitions. Define a point of concurrency.						t circumscribed a triangle.		
Make sense of problems and persevere in solving them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use approp tools strateg		Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.

Grade Level/ C	Grade Level/ Course (HS): Geometry Unit 5					
Standard with code:	i.C. 4 (+) Construct a tangent line from a point outside a given circle to the circle.					
Domain:	Circles					
Cluster:	Understand and Apply Theorems about circles					
Туре:К	Type:KnowledgeReasoningPerformance SkillXProduct					

Knowledge Targe	ets	Reasoning Targe	ets		Performance Skills 1	Targets	Produc	ct Targets
Recall vocabulary	/ :	Synthesize theor	ems that apply to	circles and	Construct the perpendicular			
Tangent		tangents, such as	s:		bisector of the line s	egment		
Radius					between the center	C to the		
Perpendicular bis	sector	Tangents drawn	from a common e	xternal point	outside point P.			
Midpoint		are congruent.						
					Construct arcs on cir	cle C		
Identify the cent	er of the circle	A radius is perpe	A radius is perpendicular to a tangent at the), having		
		point of tangency.			length of CQ.			
					Construct the tange	nt line.		
Make sense of	Reason	Construct viable	Construct viable Model with Use appropriate		Attend to	Look for a	nd	Look for and
problems and	abstractly and	arguments and			precision.	make use	-	express
persevere in	quantitatively.	critique the		strategically.		structure.		regularity in
solving them.		reasoning of						repeated
		others.						reasoning.

Grade Level/	irade Level/ Course (HS): Geometry Unit 5						
Standard with code:	C. 5 Derive using similarity the fact that the length of the arc intercepted by an angle is proportional to the radius, and efine the radian measure of the angle as the constant of proportionality; derive the formula for the area of a sector.						
Domain:	Circles						
Cluster:	Find arc lengths and areas of sectors of circles.						
Туре:	Type:KnowledgeX_ReasoningPerformance SkillProduct						

Knowledge Targ	ets	Reasoning Targe	ets			Perform Targets	ance Skills	Product Targets
Recall how to fir circumference o		Justify the radii of any two circles $(r_1 \text{ and } r_2)$ and the arc lengths $(s_1 \text{ and } s_2)$ determined by congruent central angles are proportional, such that $r_1/s_1 = r_2/s_2$						
Explain that 1° =		Verify that the constant of a proportion is the same as the radian measure, Θ, of the given central angle. Conclude s = r						
Recall from G.C.1, that all circles are similar. From Appendix A: Emphasize the similarity of all circles				es.				
Determine the c proportionality (angle, arc length a basis for introd	s are proportional lucing radian as a obe be applied to the c	rith the same centr to the radius. Use unit of measure. It levelopment of circ	this as is not			
Make sense of problems and persevere in solving them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend t precision	-	Look for and make use of structure.	Look for and express regularity in repeated reasoning.

Grade Level/	Course (HS): Geo	metry Unit 5						
Standard with code:		G.GPE.1 Derive the equation of a circle of given center and radius using the Pythagorean Theorem; complete the quare to find the center and radius of a circle given by an equation.						
Domain:	Expressing Geo	Expressing Geometric Properties with Equations						
Cluster:	Translate between	een the geometric	description and	the equation for	a conic section			
Туре:	_Knowledge	_XReasoning	Perfo	rmance Skill	Product			
Knowledge T	argets	Reasoning Targe	ets		Performance	Skills Targets	Product Targets	
Define a circle. Use Pythagorean Theorem.		Derive equation Theorem – giver length of the rac Determine the c	n coordinates of lius.					
Complete the square of a quadratic equation.		circles. Note that same central and to the radius. U radian as a unit of that it be applied	the square. From Appendix A: Emphasize the similarity of all circles. Note that by similarity of sectors with the same central angle, arc lengths are proportional to the radius. Use this as a basis for introducing radian as a unit of measure. It is not intended that it be applied to the development of circular trigonometry in this course.					
Make sense of problems and persevere in solving them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.	

Grade Level/	Course (HS): Geometry Unit 5						
Standard with code:	G.GPE.4 Use coordinates to prove simple geometric theorems algebraically. For example, prove or disprove that a figure defined by four given points in the coordinate plane is a rectangle; prove or disprove that the point (1, v3) lies on the circle centered at the origin and containing the point (0,2).						
Domain:	Expressing Geometric Properties with Equations						
Cluster:	Use coordinates to prove simple geometric theorems algebraically						
Туре:	ype:KnowledgexReasoningPerformance SkillProduct						

Knowledge Tar	gets	Reasoning Target	Reasoning Targets Performance Skills Targets Product T						ct Targets
Recall previous understandings of coordinate geometry (including, but not limited to: distance, midpoint and slope formula, equation of a line, definitions of parallel and perpendicular lines, etc.) Use coordinates to prove simple geometric theorems algebraically. For example, prove or disprove that a figure defined by four given points in the coordinate plane is a rectangle; prove or disprove that the point (1, V3) lies on the circle centered at the origin and containing the point (0, 2). From Appendix A: Include simple proofs involving circles.									
Make sense of problems and persevere in solving them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriat tools strategicall		Attend to precision.	Look for make us structure	e of	Look for and express regularity in repeated reasoning.

Grade Level/	Grade Level/ Course: Geometry Unit 5							
Standard with code:	G.MG.1 Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder).*(*Modeling Standard)							
Domain:	Modeling with Geometry							
Cluster:	Apply geometric concepts in modeling situations							
Туре:	KnowledgeXReasoningPerformance SkillProduct							

Knowledge Targets		Reasoning Targets			Performanc	e Skills Targets	Product Targets
Use measures and properti	es of (Given a real world object, clas	as a known				
geometric shapes to describ world objects	be real {	geometric shape - use this to s	solve problems	s in context.			
		From Appendix A: Focus on sit analysis of circles is required.	ch the				
Make sense of problems and persevere in solving them.	Reason abstractly a quantitative	_	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.

Grade Level/	Course: Geometry Unit 6						
Standard with code:	S.CP.1 Describe events as subsets of a sample space (the set of outcomes) using characteristics (or categories) of the outcomes, or as unions, intersections, or complements of other events ("or", "and", "not"). Statistics and Probability is a Modeling Conceptual Category.						
Domain:	Conditional Probability and the Rules of Probability						
Cluster:	Understand independence and conditional probability and use them to interpret data.						
Туре:	KnowledgeXReasoningPerformance SkillProduct						

Knowledge Targets		Reasoning Targ	gets		Performance S	kills Targets	Product Targets
Define unions, intersections and complements of events.		Describe events as subsets of a sample space (the set of outcomes) using characteristics (or categories) of the outcomes, or as unions, intersections, or complements of other events ("or", "and", "not").					
Make sense of problems and persevere in solving them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.

Grade Level/	Course: Geometry Unit 6
Standard with code:	S.CP 2 Understand that two events A and B are independent if the probability of A and B occurring together is the product of their probabilities, and use this characterization to determine if they are independent. Statistics and Probability is a Modeling Conceptual Category.
Domain:	Conditional Probability and the Rules of Probability
Cluster:	Understand independence and conditional probability and use them to interpret data.
Type:X_	KnowledgeReasoningPerformance SkillProduct

Knowledge Targ	ets	ı	Reasoning Targets		ı	Performance	e Skills Targets	Product Targets
Categorize eve	nts as independer	nt or not						
using the chara	acterization that t	wo events A						
and B are inde	pendent when the	e probability						
of A and B occi	urring together is	the product						
of their probab	0 0	•						
From Appendix A: Build on work from 2-way tables from Algebra 1 Unit 3 (S.ID.5) to develop understanding of conditional probability and independence.								
Make sense of problems and persevere in solving them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.		Attend to Look for and make use of structure.		Look for and express regularity in repeated reasoning.

Grade Level/ (Course: Geometry Unit 6					
Standard with code:	S.CP 3 Understand the conditional probability of A given B as P(A and B)/P(B), and interpret independence of A and B as saying that the conditional probability of A given B is the same as the probability of A, and the conditional probability of B given A is the same as the probability of B. Statistics and Probability is a Modeling Conceptual Category.					
Domain:	Conditional Probability and the Rules of Probability					
Cluster:	Understand independence and conditional probability and use them to interpret data					
Type:X	KnowledgeReasoningPerformance SkillProduct					

Knowledge Tar	gets	Reasoning Targ	gets		Performance	Skills Targets	Product Targets
Know the cond probability of A and B)/P(B)							
Interpret independence of A and B as saying that the conditional probability of A given B is the same as the probability of A, and the conditional probability of B given A is the same as the probability of B.							
Make sense of problems and persevere in solving them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.

Grade Level/ Co	ourse: Geometry Unit 6						
Standard with code:	S.CP. 4 Construct and interpret two-way frequency tables of data when two categories are associated with each object being classified. Use the two-way table as a sample space to decide if events are independent and to approximate conditional probabilities. For example, collect data from a random sample of students in your school on their favorite subject among math, science, and English. Estimate the probability that a randomly selected student from your school will favor science given that the student is in 10 th grade. Do the same for other subjects and compare the results. Statistics and Probability is a Modeling Conceptual Category.						
Domain:	Conditional Probability and the Rules of Probability						
Cluster:	Understand independence and conditional probability and use them to interpret data						
Type:	KnowledgeXReasoningPerformance Skill Product						

Knowledge Tai	gets		Reasoning Targets					nance Skills	Product Targets
Use the two-way table as a sample space to decide if events are independent and to approximate conditional probabilities. From Appendix A: Build on work with two-way tables from Algebra 1 Unit 3 (S.ID.5) to develop understanding of conditional probability and independence.			two cates being class random sa favorite su Estimate t student fro the studer	gories are associansified. (For examplemple of students in the probability that om your school will	icy tables of data w ted with each object ple, collect data from n your school on thei , science, and English a randomly selected I favor science given Do the same for othe sults.)	ct a r i. that			
Make sense of problems and persevere in solving them.	Reason abstractly and quantitatively.	argum critiqu	ments and mathematics. tools strategically. precise ue the ming of		Attend to precision	-	Look for and make use of structure.	Look for and express regularity in repeated reasoning.	

Grade Level/	Course: Geometry Unit 6						
Standard with code:	S.CP.5 Recognize and explain the concepts of conditional probability and independence in everyday language and everyday situations. For example, compare the chance of having lung cancer if you are a smoker with the chance of being a smoker if you have lung cancer. Statistics and Probability is a Modeling Conceptual Category.						
Domain:	Conditional Probability and Rules of Probability						
Cluster:	Understand independence and conditional probability and use them to interpret data						
Туре:	KnowledgeXReasoningPerformance SkillProduct						

Knowledge Targ	gets	Reasoning Targets			Performance	e Skill Targets	Product Targets	
conditional pro independence	Recognize the concepts of conditional probability and independence in everyday situations. (For example, compare the chance of having lung cancer if you are a smoker with the chance of being a smoker if you have lung cancer.)							
Make sense of problems and persevere in solving them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.		end to cision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.

Grade Level/ Co	ourse: Geometry Unit 6
Standard with code:	S.CP.6 Find the conditional probability of A given B as the fraction of B's outcomes that also belong to A and interpret the answer in terms of the model. Statistics and Probability is a Modeling Conceptual Category.
Domain:	Conditional Probability and Rules of Probability
Cluster:	Use rules of probability to compute probabilities of compound events in a uniform probability model.
Type:I	Knowledge X Reasoning Performance Skill Product

Knowledge Targ	ets	Reasoning Targe	ets			Performance	e Skills Targets	Product Targets
Find the condit of A given B as B's outcomes th to A.		Interpret the a	nswer in terms of					
Make sense of problems and persevere in solving them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Atter preci		Look for and make use of structure.	Look for and express regularity in repeated reasoning.

Grade Level/	Course: Geometry Unit 6
Standard with code:	S.CP.7 Apply the Additional Rule, P(A or B) = P(A) + P(B) – P(A and B) and interpret the answer in terms of the model. Statistics and Probability is a Modeling Conceptual Category.
Domain:	Conditional Probability and Rules of Probability
Cluster:	Use rules of probability to compute probabilities of compound events in a uniform probability model.
Туре:	KnowledgeXReasoningPerformance SkillProduct

Knowledge Ta	rgets	Reasoning Tar	gets		Performan Targets	ce Skills	Product Targets
Use the Addition	onal Rule, P(A or) – P(A and B)	Interpret the a	nswer in terms o	of the model.			
Make sense of problems and persevere in solving them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	end to cision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.

Grade Level/	Course: Geometry Unit 6
Standard with code:	S.CP.8 (+) Apply the general Multiplication Rule in a uniform probability model, P(A and B) = P(A)P(B A) = P(B)P(A B), and interpret the answer in terms of the model. Statistics and Probability is a Modeling Conceptual Category.
Domain:	Conditional Probability and Rules of Probability
Cluster:	Use the rules of probability to compute probabilities of compound events in a uniform probability model.
Туре:	KnowledgeXReasoningPerformance SkillProduct

Knowledge Ta	rgets	Reasoning Targ	gets			Performand Targets	ce Skills	Product Targets
Use the multip correct notation	lication rule with	probability mod	ral Multiplication del P(A and B) = F nswer in terms of		n			
Make sense of problems and persevere in solving them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.		end to cision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.

Grade Level/	Course: Geometry Unit 6
Standard	S.CP.9 (+) Use permutations and combinations to compute probabilities of compound events and solve problems.
with code:	Statistics and Probability is a Modeling Conceptual Category.
Domain:	Conditional Probability and Rules of Probability
Cluster:	Use rules of probability to compute probabilities of compound events in a uniform probability model.
Туре:	KnowledgeXReasoningPerformance SkillProduct

Knowledge Tar	gets	Reasoning Targ	Reasoning Targets			Performand Targets	ce Skills	Product Targets
Identify situations a are combinatio	nd those that	-	ons and combinate compound even	tions to compute ts and solve				
Make sense of problems and persevere in solving them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.		end to cision.	Look for and make use of structure.	Look for and express regularity in repeated reasoning.

Grade Level/	Grade Level/ Course (HS): Geometry Unit 6									
Standard with code:										
Domain:	Using Probability to Make Decisions									
Cluster:	Use probability to evaluate outcomes of decisions									
Туре:	KnowledgeX_ReasoningPerformance SkillProduct									

Knowledge Ta	gets	Reasoning Targ	gets		Performance Skill	s Targets	Produ	ct Targets
Compute Theoretical and Experimental Probabilities.		Use probabilities to make fair decisions (e.g. drawing by lots, using a random number generator.)						
			From Appendix A: This unit sets the stage for work in Algebra II, where the ideas of statistical inference are introduced. Evaluating the risks associated with conclusions drawn from sample data (i.e. incomplete information) requires an understanding of probability concepts.					
Make sense of problems and persevere in solving them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for a make use structure.	_	Look for and express regularity in repeated reasoning.

Grade Level/	Course (HS): Geo	metry Unit 6										
Standard with code:	S.MD.7 (+) Analyze decisions and strategies using probability concepts (e.g., product testing, medical testing, pulling a hockey goalie at the end of a game.) Statistics and Probability is a Modeling Conceptual Category.											
Domain:	Using Probability to Make Decisions											
Cluster:	Use probability	Use probability to evaluate outcomes of decisions										
Туре:	_Knowledge	XReasoning	Perfo	rmance Skill	Product							
Knowledge T	argets	Reasoning Targ	gets		Performance Skill	s Targets	Produ	ct Targets				
Recall prior understandings of probability.		probability con medical testing the end of a gar From Appendix for work in Algestatistical inference Evaluating the conclusions draincomplete info	ens and strategies cepts (e.g., product, pulling a hockey me.) A: This unit sets ebra II, where the ence are introductrisks associated ways from sample ormation) require of probability cor									
Make sense of problems and persevere in solving them.	Reason abstractly and quantitatively.	Construct viable arguments and critique the reasoning of others.	Model with mathematics.	Use appropriate tools strategically.	Attend to precision.	Look for a make use structure.		Look for and express regularity in repeated reasoning.				